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THESIS

THE STRATEGIC VALUE
OF THE PANAMA CANAL:
VALUE VERSUS COST

BY

Francis Fitz Randolph

June 1988

Thesis Advisor:

Frank Teti

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The Strategic Value
of the Panama Canal:
Value Versus Cost

by

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requirements for the degree of

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ABSTRACT

Using the ideas of Alfred Thayer Mahan to define the national interest, this paper analyzes the strategic value of the Panama Canal to the United States. The analysis is based on a review of the historic value and cost of the Isthmus to the power which has controlled it. This review demonstrates that the canal is a valuable component of U.S. Sea Power. The final chapter of this study discusses the future of the canal. Strategic planners should assume that the canal will be available to the United States in wartime until the year 2000. After the year 2000, unless the United States is able to extend its base rights in Panama, the canal will probably not be available during wartime, thus weakening U.S. power projection capability.

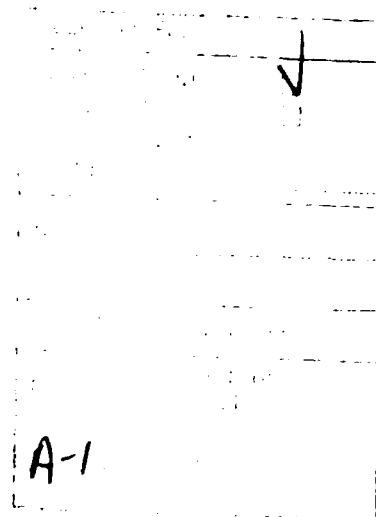
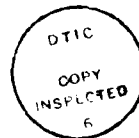


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I. INTRODUCTION

This paper will analyze the strategic value of the Panama Canal to the United States. The influence of Alfred Thayer Mahan (1840-1914) will be apparent throughout this paper, not only in the area of strategic doctrine but also in the area of methodology. This method consists of studying the history of Panama in order to discern general principles which may elucidate the present and provide guidance for the future. Drawing from this history and upon these principles, this study puts forth the following argument: If the United States wishes to remain a world leader, it must continue to be a great Sea Power. In order to remain a great Sea Power, the United States should continue its investment in the Panama Canal. However, if its control of the canal is exercised against the will of the Panamanian people, the United States will incur excessive political costs. Accordingly, the optimal U.S. strategy is to maintain the operation and defense of the canal with the consent of the Panamanian people.

A. MAHANIAN STRATEGY

This paper relies on Mahan's concepts of History, Sea Power and Strategic Value in order to define the U.S. interest in the Panama Canal. Mahan's concept of History both defines the nature of the global struggle in which the U.S. is engaged

and provides a method by which the U.S. can discern its role in global affairs. The concept of Sea Power describes the nature of U.S. national power and suggests how best this power may be employed. Strategic Value is a tool with which the importance of the Panama Canal may be assessed in relation to the broader concept of Sea Power.

1. History

Mahan considered himself an historian and advocated the use of history as a guide for action. He distinguished between using history to establish precedents versus using it to determine principles. A "precedent" is a past decision which is automatically applied to the present. As such, it may be faulty or cease to apply because of changed circumstances. Mahan did not advocate the use of history for precedents, instead he advocated its use to determine principles. "Principles" attempt to discern the unchanging essence of human life and seek to elucidate the present choices. Mahan believed that:

...war has such principles; their existence is detected by the study of the past, which reveals them in successes and failures, the same from age to age. Conditions and weapons change; but to cope with the one or successfully wield the others, respect must be had to these constant teachings of history in the tactics of the battlefield, or in those wider operations of war which are comprised under the name of strategy.

(Ref. 1:p. 7) Mahan did not recommend blind obedience to the past, but he did counsel respect for its experience.

In addition to viewing history as a fount of human experience, Mahan also had a much broader concept of history.

In the broader sense, history is the "plan of Providence" or the story of the "aggressive advance of the future upon the present." No one human or nation controls the course of history, yet the struggle of each actor leads toward an "ultimate perfection of the whole." This concept of history seems to be a blend of Christianity and Social Darwinism. (Ref. 2:pp. 267-271)

The problem for each generation is to determine how to progress, while maintaining the necessary continuity with the past. Mahan emphasized the need for a nation to struggle both for progress and for continuity--both values being higher than the value of peace. As progress can be stifled by violent resistance, so these resistances must be overcome by violence. For example, in the American Civil War, force was used to overcome slavery (Ref. 3:p. 343). On the other hand, some continuity with the past is necessary. Without continuity, historic change can degenerate into social convulsion and pose a threat to the progress thusfar achieved. In such an instance, violence must be used to curb the excesses of progress. An example of such a convulsion is the French Revolution where force was used to curb the radical affect of the revolution upon the rest of Europe (Ref. 4:pp. 362-363).

Thus, Mahan's model for history is an evolving community without a sovereign. Each nation is a part of the world community and shares in the communal evolution generated by the dialectic between progress and continuity. When a

member nation uses violence either to stifle progress or to destroy continuity, the community must use violence to thwart the harmful impulse of the recalcitrant nation. Since there is no sovereign for the community, individual nations must rise up to assume a position of leadership when communal action is required. An example of such assumed leadership is that of England during the Wars of the French Revolution.

2. Sea Power

Sea Power is the use of a nation's maritime strength to promote its interests and to influence the course of history. According to Mahan, this maritime strength arises from six principal conditions: (1) a nation's geographical position, (2) the nature of its terrain, (3) the extent of its territory, (4) the size of its population, (5) the character of its people and (6) the character of its government (Ref. 1:pp. 28-59). All of these elements of Sea Power combine to produce the navies and maritime commerce with which a nation is equipped.

Mahan was concerned both with how to develop such power and with how to wield such power, i.e., the strategy of Sea Power. He believed that the heart of Sea Power was its commercial vitality. Therefore, the proper objectives of a Sea Power strategy are: (1) to maintain its own economic vitality by maintaining its access to maritime trade, (2) to weaken an opponent's vitality by severing the opponent's access to such trade and (3) to wear down the opponent by projecting military power into the opponent's country and by subsidizing allies who will attack the opponent. Mahan

believed that if a Sea Power is able to maintain its own access to maritime trade while severing the opponent's access, the Sea Power should be able to outlast its opponent. (Ref. 4:pp. 371-372)

3. Strategic Value

Mahan believed that the issue of military advantage or strategic value can always be resolved into two elements: force and position. With regards to position, he believed that the strategic value of any location depended upon three conditions: (1) its geography or proximity to strategic lines of communication, (2) its military strength, both offensive and defensive, and (3) its resources. Of these three conditions, the location's proximity to strategic lines of communication is the most important--military strength and resources can be artificially supplied, but geography can never be changed. (Ref. 2:p. 372)

B. APPLICATION TO THE PANAMA CANAL

Applying Mahan's concepts to the U.S. interest in the Panama Canal results in the following analysis. Humankind is evolving toward a higher and more beneficial social order. However, the security of this evolution is not guaranteed: individual nations or groups of nations, through violence, can hinder this process or threaten the progress thusfar obtained. The United States is part of this evolutionary process. Because of its historic circumstances, the United

States is a great Sea Power. This Sea Power is a useful tool in the evolutionary process and permits the United States to exercise a role of global leadership, if it so chooses.

The issue which remains is to determine the strategic value of the Panama Canal to U.S. Sea Power. Given Panama's lack of resources, military or otherwise, the value of the canal hinges on its geography or proximity to strategic lines of communication. Chapter Two of this study examines the history of the Panamanian crossroad in order to illustrate the principle that Panama's location gives it enduring strategic value--especially to a great Sea Power like the United States. Chapter Three reviews the economic, military and political costs that have been incurred by the two great Sea Powers which have controlled this strategic location. Chapter Four looks to the future of the Panama Canal and concludes with a discussion of U.S. strategy toward Panama.

II. HISTORIC VALUE

Since the 1500's, the Panamanian Isthmus has had strategic value to whichever Sea Power controlled it. However, of the three components of Mahan's concept of strategic value, only the area's geographical position has been the source of indigenous strength. Foreign Sea Powers have had both to develop Panama economically and to provide for its defense. Thus, the ultimate worth of the Isthmus to a Sea Power depends on whether the value stemming from its geographical position outweighs the cost resulting from its maintenance and defense. This chapter will review the historic value of the Isthmus to two great Sea Powers--Spain and the United States. This value has been both commercial and military in nature. From this history, two principles may be discerned. First, the Isthmus has considerable value when it holds a monopoly on an important line of communication. Second, this value diminishes when either the monopoly is broken or the value of the commerce declines. Given the existing circumstances in relation to U.S. interests, the canal has minor commercial value, but major military importance.

A. COMMERCIAL VALUE

1. The Spanish Empire

From the early 1500's to the mid-1700's, Panama held a legal monopoly over key trade within the Spanish Empire.

The Panamanian town of Nombre de Dios shared a monopoly with Vera Cruz and Cartegena to conduct trade between Spain and Spain's possessions in the Western Hemisphere. By the mid-1500's, Panama was the third richest Spanish possession, and Panama City was the most important city in all of the Americas. At the height of Panama's sixteenth century prosperity, 14 to 15 Spanish ships visited Panama each year. The Spanish fleet delivered supplies and slaves to Panama to be transhipped to the rest of the Spanish Pacific. In return, Panama delivered to the fleet the treasure which it has accumulated from throughout the Spanish Pacific. (Ref. 5:pp. 3,9; Ref. 6:pp. 248-250)

By the 1600's, the value of the Isthmus began to decline as the Spanish colonies' production of precious metals dwindled. Furthermore, Panama gradually began to lose its monopoly over colonial trade. In the 1600's, the monopoly was illegally compromised by the growth of smuggling. Then, in the early 1700's, the English gained limited trade privileges within the Spanish Empire; the English embraced the trade, but ignored the limits. The English trade bypassed Panama by shipping directly from English ports to Spanish colonial ports. Accordingly, fewer and fewer colonial merchants came to Panama to buy the more expensive Spanish goods. In an attempt to curb the English smuggling, the Spanish in 1740 relaxed colonial trade restrictions and permitted direct trade between Spain and the colonial ports in the Spanish

Pacific. With this relaxation, Panama lost its legal monopoly over Spanish colonial trade. Trade within the Empire improved, but Panama lost its commercial importance. (Ref. 5:pp. 11-13; Ref. 6:pp. 390, 473, 586-587)

2. The United States

The development of California in the late 1840's created a major trade region in the Pacific and thus renewed the demand for Isthmian transportation. The years 1850-1855 were a time of great prosperity for Panama, as goods and travelers once more streamed across the Isthmus. Travelers at that time described Panama City as a "wide-open booming seaport" and reported that the city was a "better place of business than San Francisco." The upsurge in opportunities led U.S. private investors to finance the construction of the Panama Railway to replace the Spanish mule trail which crossed the Isthmus. After the railroad was completed in 1855, both local and global trade increased to an even higher level. (Ref. 7:p. 112; Ref. 8:p. 672)

The U.S. intercoastal trade was important, but as early as the late 1850's this trade constituted only ten percent of the Isthmian traffic; the majority of the trade was either between North America and Asia or between North America and Europe. The United States, in addition to developing California, was industrializing and expanding its economic role in the world. Between 1848 and 1869, approximately 600,000 people crossed through Panama--400,000

transiting via the railroad between 1856 and 1866. The flow of goods was also impressive: precious metals, paper money, jewelry, mail, coal, lumber, oil, wine and other merchandise. (Ref. 5:p. 18; Ref. 7:p. 36; Ref. 8:p. 673)

Beginning in the late 1860's, the value of the Isthmus began to diminish as alternate lines of communication were established. In 1869, the U.S. completed the Union Pacific Railroad which offered an efficient and direct connection between the U.S. East Coast and the West Coast. Furthermore, the British established a line of large steamships running from Europe, through the Straits of Magellan, to ports in the South Pacific. While the railroad diverted American trade away from Panama, the steamships diverted European trade. (Ref. 8:p. 673)

Panama regained a monopoly of sorts with the U.S. government's completion of the Panama Canal in 1914. The canal permits a ship to transit between the mid-Atlantic and the mid-Pacific Oceans without having to steam 8,000 miles around South America--a considerable savings in shipping costs. While other modes of transportation between the West Coast and East Coast of the Americas exist--such as railroads, highways and pipelines--the canal remains the only such maritime line of communication.

Approximately one half to two thirds of all canal traffic is either in transit to or in transit from the United States. The canal accommodates all types of cargo, although

bulk-type goods predominate. In 1986 the primary cargo transiting the canal was either petroleum and petroleum products (22.1% of canal traffic) or grains (16.4%). Furthermore, the primary trade transiting the canal was either between Asia and the U.S. East Coast (36% of canal traffic) or between Europe and the U.S. West Coast (12%). However, despite the dominance of U.S. trade in the canal, this canal traffic only accounts for approximately 14% of U.S. oceanborne foreign trade. It is generally conceded that Latin America is far more dependent on the canal for its foreign trade than is the United States. (Ref. 9; Ref. 10; Ref. 11:pp. 341, 447)

In summary, the commercial value of the Panamanian Isthmus has varied dramatically over the course of its history. The commercial value of the Isthmus has depended on the volume and value of the trade and on the availability of alternate trade routes. The Isthmus has had its greatest value when it is the only route for a high valued trade and has had its lowest value when the economics of commercial transportation dictate the bypassing of Panama. At present, the Panama Canal is the only maritime line of communication through the Americas, but the value of this trade to the United States is only modest.

B. MILITARY VALUE

In addition to its commercial value, the Isthmus has always had a military value. For the Spanish Empire, it was a line of communications for projecting Spanish power into the Pacific. For the United States, it has been both a means to project power into the Atlantic or the Pacific and a means to enhance the maritime defense of the United States.

1. The Spanish Empire

During the 1500's, Panama provided a short link between the Caribbean and the Pacific and thus became a major base of operations for Spanish expansion into the Pacific. The historian H. E. Bancroft claimed that without Panama, Spain would neither have been able to conquer Peru nor have been able to keep it (Ref. 6:pp. 249-250). Panama remained an important military line of communication until the mid-1700's when Spain opened alternate commercial lines of communication between itself and the Americas. These new lines of communication became the new military lines of communication, and Panama became a military as well as economic backwater (Ref. 5:pp. 12-13). By the 1800's, Spain lost control of the majority of its empire in the Americas, and Panama ceased to be of military importance.

2. The United States

Panama regained its military importance in the early 1900's with the opening of the Panama Canal and the development of U.S. naval power. Long before the canal was completed,

the U.S. considered the strategic consequences of such a canal. In 1879 U.S. Senator Ambrose Burnside of Rhode Island (the Union commander at the Battle of Fredericksburg) proposed a resolution to the effect that the U.S. "would not view without serious disquietude any attempt of the powers of Europe to establish under their protection and domination a ship-canal across the isthmus of Darien." (Ref. 12:p. 71) In 1881 the House Committee on Foreign Affairs issued a report which concluded that such a canal would be "of vast and paramount importance to the people of the United States." (Ref. 12:p. 82)

In 1890 Mahan, in his The Influence of Sea Power Upon History, 1660-1783, elaborated on these ideas. Mahan saw that the canal would attract international rivalries into the Caribbean and that these rivalries would mix with unsettled political conditions there to produce a dangerous situation very close to the United States. If America mastered these problems, it would be propelled to international greatness. To master these problems, the U.S. would need a modern navy, adequate coastal defenses, overseas naval bases, plus a revived U.S. merchant marine. Mahan's proposed global strategy was "dominance in the Caribbean, equality in the Pacific, and interested abstention from the strictly Continental rivalries of the European powers." (Ref. 13:p. 88) Mahan warned that if the U.S. chose to ignore the problems posed by the canal, then another power would usurp the U.S.

role in the Caribbean. If this happened, the American people would face a "rude awakening." (Ref. 1:p. 33; Ref. 13:pp. 81-85)

The Spanish-American War provided a dramatic lesson in the importance of an Isthmian canal. At the outbreak of the war, the U.S. battleship OREGON was in San Francisco. The navy ordered the OREGON to Florida to join the U.S. fleet preparing to engage the Spanish fleet in Cuba. Because of the absence of a canal, the OREGON had to travel around Cape Horn--a voyage of 12,000 miles (instead of 4,000 miles if there had been a canal). The battleship left San Francisco on March 19, 1898 and arrived off Palm Beach, Florida on May 24, i.e., 67 days later. (Ref. 7:p. 254)

After the completion of the canal in 1914, the U.S. Army assumed responsibility for the canal's defense. In its strategic planning for the defense of the United States, the Army appreciated the importance of the canal. In May of 1939, the Army's War Plans Division described Panama as "the Keystone in the defense of the Western Hemisphere." (Ref. 14:p. 18) The Army recognized the Navy as the nation's first line of defense against either European or Asian threats. The canal provided a swift and secure means to concentrate the fleet against a threat from either direction. When the Navy, in July of 1940, shifted the bulk of the fleet to the Pacific to counter the rising Japanese danger, the Army concluded that the canal had then become "the most strategic spot in the world today." (Ref. 14:p. 64) The Army was

concerned about the ability of the fleet to move quickly from the Pacific to the Atlantic, if necessary, to counter the rising German threat.

The canal proved its strategic value to the United States during the Second World War. Approximately, 6,400 combatants and 10,300 supply vessels (loaded with 24 million tons of military supplies) transited the canal during the war (Ref. 11:p. 142; Ref. 15:p. 81) The direction of this wartime commerce was primarily from the East Coast of the United States to the war zones in the Pacific. These statistics include the return trips by the same ship. (Ref. 16: p. 201; Ref. 17:p. 166)

After the Second World War, with the advent of nuclear weapons, the strategic value of the canal became subject to serious question. The existence of nuclear weapons seemed to undermine, if not totally eliminate, the value of the canal. Since the Navy could not prevent a nuclear attack on the United States, it was no longer the nation's first line of defense. Furthermore, while the Army and Navy were confident that they could continue to protect the canal from sabotage, naval bombardment and air attack, there was no defense to a nuclear missile. (Ref. 18:pp. 55-56)

However, the Korean War, the Cuban Missile Crisis and the Vietnam War proved the enduring wartime value of the canal--even in the nuclear age. During the Korean War, the use of the canal by naval combatants and military supply

vessels tripled from its peacetime level of use. An estimated 22% of the Army's supplies in Korea passed through the canal. During the Cuban Missile Crisis, one half of the amphibious forces which took station off Cuba came from the U.S. West Coast--via the canal. Finally, during the Vietnam War, the use of the canal by naval combatants and military supply ships quintupled from peacetime levels. In 1968 approximately 59% of the U.S. supplies in Vietnam passed through the canal. The Department of Defense estimated that between 1967 and 1970, the canal saved the U.S. approximately \$72 million per year in transportation costs. Admiral Thomas H. Moorer, the Chairman of the Joint Chiefs of Staff during a portion of the war, stated that the canal was useful both as a means of transferring combatants from the Atlantic to relieve the burden on the Pacific units and as a means of swiftly reinforcing the Pacific Fleet if either the Soviet or Chinese navies had become involved in the Vietnam War. (Ref. 11:p. 108; Ref. 17:p. 166; Ref. 19:pp. 10-11; Ref. 20:pp. 144, 301, 314; Ref. 21:pp. 217, 270)

During the 1977-1978 national debate over the Panama Canal Treaty, U.S. military leaders testified that the canal was of continuing value to the United States. Secretary of Defense Harold Brown stated that "the Panama Canal will, for the foreseeable future, be an important defense artery for the United States." (Ref. 21:p. 240) Chairman of the Joint

Chiefs of Staff, General George S. Brown, U.S.A.F., agreed, observing that the canal is

...a major defense asset, the use of which enhances U.S. capability for timely reinforcement of U.S. forces. The strategic military value of the canal is reflected in our ability to accelerate the shift of military forces and logistics support by sea between the Atlantic and Pacific Oceans.

(Ref. 21:p. 240) In a letter to President Jimmy Carter, four former Chiefs of Naval Operations--Admirals Thomas H. Moorer, Arleigh A. Burke, Robert B. Carney and George W. Anderson--stressed the "increasingly important" value of the canal (Ref. 22:pp. 10-11).

In summary, the canal is a very valuable strategic asset during wartime. By providing a secure and direct maritime route through the Americas, it possesses a practical monopoly over important military communications. These communications are of two types. First, the canal provides a means to shift the Navy quickly between the two oceans. Second, the canal is a major defense artery for the supply of our forces overseas. While the canal may be only of minor commercial importance to the United States, in terms of national security it is a unique and valuable asset.

III. HISTORIC COSTS

In order to benefit from Panama's strategic value, Spain and the United States both incurred significant costs. These costs were of an economic, military and political nature. Economically, the various forms of Isthmian transportation had to be built and maintained. Militarily, the crossroad had to be fortified and defended. Politically, other powers had to be kept at arms length, and Panamanian nationalism had to be either accommodated or resisted. From this history, three principles may be discerned. First, the development and maintenance of Isthmian transportation has relied heavily on foreign investment. Second, the defense of the Isthmus poses an extremely complex military problem. Ideally, not only must the Isthmus be fortified and guarded on a continuing basis, but also the adjacent seas must be controlled and hostile powers must be prevented from establishing military bases within the region. Finally, while economic and military considerations dictate an active foreign role within Panama, this foreign presence stimulates a strong, nationalistic reaction from the Panamanian people. This reaction poses a significant political cost to any power which seeks to employ the Isthmus as a commercial and military asset.

A. THE SPANISH EMPIRE

1. Economic Costs

In the 1520's, Spain built a mule trail, the Camino Real, across the Panamanian Isthmus. Given Panama's mountains, jungles and periodic floods, the project was costly. In the 1530's, a station, known as Cruces, was built at the head of navigation on the Chagres River. During the dry season, the entire highway was traversible by land. However, during the rainy season, travel was by land between Panama City and Cruces, and then by river between Cruces and the Caribbean. The entire journey during the rainy season could take up to two weeks. The Spanish deliberately kept the road primitive in order to discourage attacks. This transit remained basically unchanged from 1521 to 1855. (Ref. 6:p. 248; Ref. 23: p. 248; Ref. 24:pp. 194, 301)

2. Military Costs

While Spain's investment in the development of the Camino Real was minimal after the 1520's, the Spanish investment in the defense of the road was considerable until the mid-1700's. Beginning in the late 1500's, Spain faced naval challenges in the Americas from the English, French and Dutch. Panama, as a nerve center for colonial communications, became a battleground for these rivalries.

More than any other nation, England posed the greatest naval challenge to Spain's control of Panama. England launched raids against the Isthmus in 1572, 1575, 1585-1586, 1595-1596,

1602, 1739 and 1740. In 1741 the English attempted to occupy Panama. The campaign was a coordinated attack from both the Caribbean and the Pacific. From the Caribbean, a fleet of 29 major warships, plus smaller craft, with 27,000 sailors and soldiers planned to attack Cartagena and then occupy Panama. From the Pacific, a fleet of six warships with 1500 men was to raid the coast of Peru and then support the occupation of Panama. The campaign failed when the Caribbean forces were defeated at Cartagena. (Ref. 5:p. 10; Ref. 6:pp. 405-415, 418-420, 465, 589-593)

The problem of defending Panama became increasingly difficult beginning in the mid-1600's. In the 1630's and 1640's, English, French and Dutch settlers poured into the Caribbean and occupied islands which the Spanish had left unguarded. These settlements not only increased the rivalry in the Caribbean, they also provided secure bases for smuggling and raids on the Spanish. In the late 1600's, the Spanish suffered heavily at the hands of the buccaneers. "Buccaneers" were pirates who were aligned with a European power, were supported by that power and conducted attacks on the Spanish from Caribbean bases. Buccaneers attacked Panama throughout the 1660's to the 1680's, including the capture and destruction of Panama City in 1671. The problem with the buccaneers remained until the European powers began to withdraw their support. (Ref. 5:pp. 11-12; Ref. 6:pp. 486-508, 517-540)

After the failed English campaign in the 1740's, Spain continued to fortify and defend Panama. However, these defenses were never tested again. With the rerouting of Spain's commercial lines of communication around the tip of South America, Panama lost its strategic importance. Then, in the early 1800's, the Spanish hold on both Panama and the majority of Latin America was broken. With the loss of these interests, Spain withdrew its protection.

3. Political Costs

Until the 1740's, Panama held a privileged place within the Spanish Empire and economically depended on its trade monopoly granted by Spain. Until the Spanish Empire began to crumble, the Panamanians never challenged Spanish rule. As late as the mid-1800's, the average Panamanian showed very little inclination to become involved in politics. Accordingly, coping with Panamanian nationalism was never a political cost to the Spanish control of the Isthmus. (Ref. 8:p. 524)

B. THE UNITED STATES

1. Economic Costs

In the late 1840's, American investors perceived the renewed demand for Isthmian transportation and financed the construction of the Panama Railway. The investors expected the construction to require two years and a cost of two million dollars, but the project actually required five years

and a cost of eight million dollars. Furthermore, during the course of the railroad's construction, between 1850 and 1855, approximately 6,000 laborers died, mostly from disease. Nonetheless, the railroad proved to be a financial success and a great boon to the Isthmian economy. A system of foreign steamship service quickly developed to shuttle passengers and goods between the railroad's terminus ports and other ports throughout the world. (Ref. 7:p. 35; Ref. 8:p. 664)

In the 1870's, a private French company attempted to improve Isthmian transportation by digging a sea-level canal across Panama. The company estimated that the project would cost \$132 million, raised \$275 million from public subscriptions in France and bought vast quantities of the best equipment then available: 32 steam shovels; 3,300 flatcars and trucks; 49 locomotives; 169 drills; 14 dredges; 92 boats, barges, tugs, lighters and other small craft; 80 miles of railway track; and 96 pumps. Thousands of laborers were brought from the West Indies, and hundreds of skilled workers were brought from France. In June of 1881, the French bought the Panama Railway for \$17 million, and in January of 1882 they began the digging. (Ref. 7:pp. 118, 135-136; Ref. 17: pp. 36-37)

The French grossly underestimated the difficulty of the project. An estimated 20,000 to 22,000 workers died, mostly from disease. The digging was hindered by torrential floods, mud slides and almost impenetrable rock. In February

of 1889 the company went into receivership, and by May of 1889 all work on the canal ceased. The French spent approximately \$300 million, but only completed about one third of the necessary excavation. (Ref. 7:pp. 195-203, 235, 610; Ref. 17:p. 37; Ref. 25:p. 146; Ref. 26:p. 25)

In 1904 the U.S. government acquired the remnants of the French work and recommenced the digging. The U.S. adopted a lock-and-lake design for the canal and completed the task in August of 1914. Adding both the French and American costs, the Panama Canal cost approximately \$639 million and 25,000 lives. The French and the Americans excavated over 232 million cubic yards of mud and rock, an amount three times as great as that excavated during the French construction of the Suez Canal. (Ref. 5:p. 26; Ref. 7:pp. 402, 488, 610-611)

Vessels transiting the canal from the Caribbean to the Pacific enter the canal at Cristobal, Panama. From there, the vessels travel approximately five miles until they reach a series of three locks known as the "Gatun Locks." The locks raise the ships from sea-level to eighty-five feet above sea-level. The ships are thus able to make the thirty-one mile transit from the Gatun Locks, through Gatun Lake, to the ten-mile long Culebra Cut. The vessels then return to sea-level, via the Pedro Miguel Lock and the Miraflores Locks, and exit into the Pacific at Balboa, Panama. The locks are double-lock in construction, so as to permit simultaneous

vessel transit in both directions. The transit from the Pacific to the Caribbean is exactly the same, except in reverse order from the Caribbean to Pacific transit.

(Ref. 15: Figures 2 & 3)

The design of the canal today is the same as it was in 1914, although the U.S. has continued to make improvements. The Culebra Cut has been widened to 500 feet, a second storage dam has been built across the Chagres River, the original towing locomotives have been replaced, and channel lighting has been installed (to permit nighttime and poor visibility transits). In addition, dredging remains a continuous duty. (Ref. 7: pp. 612-613)

2. Military Costs

With the completion of the canal, the U.S. Army assumed responsibility for the canal's defense. Until the 1930's, the Army considered the principal threat to the canal to be either sabotage or naval bombardment of the canal's locks and dams. The Army's solution was to position powerful coastal guns at either terminus, plus establish field fortifications for the locks and dams. Beginning in the 1930's, the Army also became concerned about the threat posed by combat aircraft--either from land bases or from carriers. The Army's solution was to establish an air defense network around the canal, based on long-range air patrols, local radar installations and a screen of outlying

bases. Local sites for air bases, air defense guns and radar installations were obtained from Panama. Outlying bases were obtained in Puerto Rico, Cuba, Jamaica, Antigua, St. Lucia, Trinidad, British Guiana, Peru, Ecuador, the Galapagos Islands and Guatemala. (Ref. 27:pp. 301, 303, 327 and 339-340)

The Second World War never tested the U.S. preparations against sabotage, naval bombardment, air attack or invasion. Nonetheless, the defenses were tested and found wanting. The gap in the canal's defenses proved to be in the defense of merchant shipping using the canal. At the ABC Conference with Britain and Canada in March of 1941, the United States agreed to protect allied shipping as its principal naval task in the event that the U.S. became a belligerent. But when the war came, the U.S. proved unprepared for this task. (Ref. 28:p. 49)

The German U-boats began a campaign against allied shipping in the Western Hemisphere in February of 1942. The results shocked the U.S. war planners. With regards to the Western Caribbean, between February and July of 1942, the Germans sank 114 ships for a total loss of over 500,000 tons of allied and neutral shipping. The Caribbean was entirely the responsibility of the United States, but the Navy lacked both equipment and training. The Navy did not institute convoys until that July, and even when they did the initial results were embarrassing. Between July and

September of 1942, the U-boats sank seventy-five ships in the Caribbean, the majority of them under U.S. escort. From July to December total allied and neutral losses in the area were 157 ships or over 770,000 tons of shipping. (Ref. 28: pp. 49, 144-148, 347; Ref. 27:p. 431)

One of the problems in the Western Caribbean was the division of responsibility between the Army and the Navy. On December 12, 1941, President Franklin Roosevelt decided that the Army would be responsible for the Panama Coastal Frontier (which included both Panama and the adjacent Pacific waters), while the Navy would be responsible for the Caribbean Coastal Frontier. Accordingly, the Army concentrated its resources against the threats of sabotage and Japanese air, surface or submarine attack. The Japanese attacks never materialized. Meanwhile, on the Caribbean side, by December of 1943 the Germans had destroyed almost two million tons of allied or neutral shipping. (Ref. 27:p. 410; Ref. 28:p. 200)

Starting in 1943 the U.S. defenses in the Caribbean became increasingly effective as the U.S. increased both the quantity and the quality of its convoy escorts, patrol aircraft and radar stations. Between January and July of 1943, the Germans sank only 22 ships (over 107,000 tons). In July and August, the Germans launched an intensive campaign against Caribbean shipping, employing ten U-boats. This campaign resulted in the loss of only six allied or neutral ships

(approximately 35,000 tons) at a cost of seven U-boats. By that December, the German abandoned the Caribbean as a theater of operations. (Ref. 27:p. 431; Ref. 28:p. 200)

After the Second World War, the U.S. military began to consider the problem of defending the Panama Canal from a nuclear attack. In August of 1953 the U.S. exploded a simulated forty kiloton atomic bomb near the Miraflores Locks in order to train defense crews. By 1957 the U.S. concluded that the canal was defenseless against nuclear attacks. The U.S. requested additional bases from Panama in order to construct missile sites to protect the canal. The Panamanians took the request "under advisement," the U.S. did not press its request and no further attempts were made to defend the canal from a nuclear attack. (Ref. 18:pp. 49-50, 55-56)

The issue of the defense of the canal was addressed at length during the Congressional hearings on the 1977 Panama Canal Treaties. The Vice Chief of Naval Operations, Admiral Robert L. J. Long, told the Senate Foreign Relations Committee that defending the canal from a nuclear attack was "virtually impossible." He observed that this vulnerability was shared by most other U.S. installations. Furthermore, in the event of a nuclear war between the super powers, the canal would probably be of inconsequential value. (Ref. 11: p. 101)

The Department of Defense and the State Department identified four possible threat scenarios: (1) terrorist

attacks against the canal's locks, dams and other key points;
(2) a commando operation, several thousand strong, which was neither supported nor opposed by the Panamanian military;
(3) a commando operation supported by the Panamanians and
(4) a large-scale military campaign, conducted by the Cubans and the Panamanians with the support of other guerrilla forces. The report concluded that continuous operation of the canal could not be guaranteed, but that only limited interruption could be. The U.S. forces in Panama could counter the first threat by itself and could counter the second, third and fourth threats if able to be reinforced from the United States. In the event of the fourth scenario, the report estimated that the needed U.S. commitment would be about three divisions or 100,000 troops (Ref. 11:pp. 132, 180-182)

Robert G. Cox, a civilian witness, told the House Subcommittee on the Panama Canal that there were ~~thirteen~~ possible actions which could lead to the closure of the canal: (1) sabotage of power supplies or lock machinery; (2) small arms or artillery fire against ships in transit or the locks, (3) mining of the waterways, (4) drainage of Gatun Lake through a breach in the locks or dams, (5) seizure of hostages in order to interrupt operations, (6) kamikaze attacks by low performance aircraft, (7) armed rebellion by the Panamanians, (8) civil disobedience and labor strikes, (9) scuttling of a ship in the locks or channel, (10) commando

assault, (11) nuclear missile attack, (12) combat aircraft or (13) naval blockade. He believed that the first four or five threats were the most likely, but acknowledged that the probabilities depended on the existing international situation. He concluded that the canal was "one of the least defensible waterways in the world." (Ref. 20:p. 149)

The military experts who testified before Congress disagreed with Cox. Lieutenant General D. P. McAuliffe, commander of U.S. forces in Panama, testified to the Senate Foreign Relations Committee that the existing U.S. defenses were adequate. While he could not guarantee the uninterrupted operation of the canal, he was convinced that he could limit any such interruption to a short duration. (Ref. 11:pp. 102-103)

An important issue was whether the U.S. could properly defend the canal without U.S. forces in Panama. Colonel John P. Sheffy, the Executive Director of the 1970 Canal Study Commission, told the House Subcommittee on the Panama Canal that "in the absence of adequate defense rights and effective U.S. defense forces on site, the Panama Canal will be denied to the U.S. in an emergency." Sheffy explained that, short of a nuclear attack, the only attack which could seriously harm the canal would be one that successfully destroyed the dams or locks and then let Gatun Lake drain. Studies and exercises have demonstrated that while on-site

forces can not totally prevent the attacks on the locks, they can stop the draining of the lake. If the necessary U.S. forces are not present, then a very limited attack can paralyze the canal for two years. (Ref. 20:pp. 146, 154)

3. Political Costs

For the United States, there have been three inter-related political arenas which involve the canal: the U.S. domestic arena, the global arena and the Panamanian arena. U.S. domestic politics is outside the scope of this study. This section will first look at the costs of the canal in terms of global politics and then will focus on the costs in terms of U.S.-Panamanian relations.

a. Global Politics

The first diplomatic policy adopted by the U.S. to defend the canal was to try to dominate the Caribbean, to the exclusion of all other powers. To avoid even the pretext for another power's intervention, the U.S. unilaterally assumed the responsibility for the area and exercised a "benevolent, imperial tutelage." (Ref. 13:pp. 142-143) However, by the 1920's, the U.S. doubted the wisdom of this policy. The more the U.S. tried to intervene to bring stability to the Caribbean, the weaker and the less stable the region seemed to be. Furthermore, anti-U.S. feelings spread throughout all of Latin America. The U.S. searched for a better solution.

The better solution proved to be Franklin Roosevelt's "Good Neighbor Policy." Roosevelt declared that it was not in the U.S. interest to acquire any territory belonging to any Latin American republic. This declaration, plus an increased sensitivity toward Latin American sentiments, defused much of the anti-U.S. tension throughout the hemisphere. As the Second World War drew closer, Roosevelt attempted to develop this new good will into a hemispheric solidarity against the Axis powers. This aspect of the Good Neighbor Policy met with varying degrees of success. (Ref. 27:p. 305; Ref. 29:p. 172)

Overall, Roosevelt's diplomacy toward Latin America was a success and a cornerstone of U.S. national security during the Second World War. Between December 7, 1941 and January 15, 1942, Costa Rica, Cuba, the Dominican Republic, Guatemala, Haiti, Honduras, Nicaragua, Panama and El Salvador joined the war against the Axis. During this same period, Colombia, Mexico and Venezuela severed diplomatic relations with the Axis nations. Before the war ended, only Argentina and Chile refused to sever diplomatic relations with the Axis; the remaining nineteen Latin American countries supported the U.S. war effort. (Ref. 29:pp. 172-174, 211)

In the 1950's, U.S. and Soviet diplomatic competition brought the Cold War to Latin America. Both the U.S. and the Soviet perceived that the history of U.S.

imperialism in the Caribbean offered an opportunity for Soviet and Communist penetration. The U.S. sensed the need to continue to seek the good will of the Latin Americans. However, with the brief exception of President Kennedy's development initiatives in the early 1960's, the U.S. priorities lay elsewhere and Latin America did not receive the U.S. attention which it had in the 1930's. Furthermore, the U.S. remained willing to intervene where it perceived a danger to its interests--for example, Guatemala in the 1950's, the Dominican Republic in the 1960's and Chile in the 1970's.

Throughout this era, the U.S. control of the Panama Canal Zone remained a sensitive subject. The U.S. claimed its rights under the 1903 Hay-Buna-Varilla Treaty with Panama. Nonetheless, from many quarters, the U.S. heard the observation that the Canal Zone constituted a U.S. colony within Latin America. President Carter, when he assumed office in 1977, vowed to divest the U.S. of its ownership of the Canal Zone and thus improve the U.S. diplomatic standing with both Panama and the rest of Latin America.

During the Congressional hearings on the 1977 Panama Canal Treaties, Secretary of State Cyrus Vance told the Senate Foreign Relations Committee that the treaty would "promote constructive and positive relationships between the United States and the other nations in this hemisphere." (Ref. 11:p. 10) Ellsworth Bunker, one of the

conegotiators of the treaty, stated that he had long perceived "how urgent was the need for the United States to modernize its relationship with Panama, and how important such a step forward was for our position in the hemisphere." (Ref. 11:p. 15) Sol Linowitz, the other conegotiator, testified that "all the countries of the hemisphere have made common cause in looking upon our position in the canal as the last vestige of a colonial past which evokes bitter memories and deep animosities." (Ref. 11:pp. 19-20) Despite strong opposition by U.S. conservatives within both the Senate and the rest of the country, the 1977 Panama Canal Treaty and the accompanying 1977 Neutrality Treaty were ratified by the Senate in 1978.

The U.S. and the Soviets continue to compete diplomatically throughout Latin America, and the U.S. presence in Panama somewhat remains a point of contention. The Soviets recognize that the Panama Canal is a "strategically important waterway." (Ref. 30) Since 1977 Soviet diplomacy has been very active toward Panama. The Soviets have sought to expand their influence by championing Panamanian nationalism (Ref. 31), by developing the Panamanian communist party (Ref. 32) and by working to establish diplomatic relations with Panama (Ref. 33). Simultaneously, the Soviets have sought to reduce U.S. influence by isolating the U.S. diplomatically (Ref. 34) and by pressuring for the reduction of the U.S. military presence in the region (Ref. 35). Judging

by the results, the Soviets have been successful. The Soviets may be close to opening official ties with Panama and have helped to keep the U.S. presence, both in the Canal Zone and in the region, a source of contention. On the other hand, the U.S. remains the significant diplomatic, military and economic influence in the region. Likewise, the Panamanian communists remain only a minor political force within Panama.

The Soviets relate their campaign for support in Panama to their campaign for support throughout Latin America. This diplomatic policy takes two forms. First, the Soviets link what is happening to Panama to what is happening in Latin America. They portray purported U.S. aggression toward Panama and Central America as merely one aspect of what the Soviets term the U.S. "Big Stick" policy toward all of Latin America. The Soviets accuse the U.S. of using "the canal area as a springboard to launch imperialist aggressions" against the rest of Latin America (Ref. 36). Second, the Soviets link what is happening in the rest of Latin America to what is happening in Panama. The Soviets claim that what is happening in Panama can best be understood as part of a revolutionary movement throughout all of Latin America (Ref. 37). While seeking to isolate the U.S. from the Panama Canal, the Soviets also seek to isolate the U.S. from Panama, Central America and the rest of Latin America.

The U.S. diplomatic struggle for the Panama Canal began in the early part of this century and continues now unabated. While what the U.S. has struggled for and who the U.S. has struggled with have changed over time, the nature of global politics seems to dictate that there will always be a struggle if the U.S. wishes to benefit from the canal. This struggle also has a binational context as well as an international context. It is to this binational context, i.e., U.S.-Panamanian relations, to which this study now turns.

b. U.S.-Panamanian Relations

In 1903, with U.S. support, Panama established its independence from Colombia. The beginning was somewhat shakey due to the questionable circumstances surrounding the negotiation of the Hay-Bunau-Varilla Treaty of 1903 which gave the U.S. sovereign power over the Canal Zone "in perpetuity." (Ref. 26:pp. 375-378, 384) However, all in all, the initial relationship was very good. In the early 1900's, many Panamanians favored the ultimate annexation of Panama to the United States. As late as December of 1907, Ricardo Arias, the Panamanian Secretary of Foreign Affairs, argued for a relationship between the United States and Panama comparable to that then existing between Great Britain and its colony India. (Ref. 38:pp. 50, 133)

Nonetheless, the present conflict between Panamanian nationalism and U.S. interests in the Panama Canal date back

to 1908. With the U.S. heavily committed to the construction of the canal, the U.S. became increasingly concerned about the course of Panamanian politics. In 1908 U.S. Secretary of War William Howard Taft told the U.S. Governor of the Canal Zone, Joseph Blackburn, to tell Panamanian President Dr. Manuel Amador to favor Jose Domingo de Obaldia over Ricardo Arias in the 1908 Panamanian presidential elections. Amador ignored the promptings and supported Arias. (Ref. 38:pp. 135-139)

Taft remained concerned about the 1908 elections and pushed the U.S. deeper into Panamanian politics. Arias' opposition party, partially to discredit the government, called upon the U.S. to send troops to protect voters and to prevent fraud. The U.S. declined the request. Obaldia's party won the June 1908 municipal elections. While the U.S. had not been directly involved in the elections, there was a general feeling in Panama that Obaldia's victory was largely attributable to U.S. support. (Ref. 38:pp. 154-174)

Wishing to avoid a likely defeat in the July presidential elections, Arias withdrew from the race. Despite his own party's request for U.S. troops at the elections, Arias tried to save face by blaming the U.S. for his party's poor showing at the polls. He warned of the "imminent peril of military occupation of the country by United States forces, which would be a death blow to our national existence." (Ref. 38:p. 178) Obaldia, the victor, also heightened the

public impression of U.S. control and manipulation. In his victory statement to the Panamanian people, Obaldia expressed confidence "in the beneficial influence which the great and powerful North American nation will exert over our incipient nation...." (Ref. 38:p. 184) The retiring president, Dr. Amador, remarked that both Obaldia and Arias, by their conduct in the elections, had "seriously threatened the existence of the Republic." (Ref. 38:p. 184)

One pattern in U.S.-Panamanian relations was now set. Fearing for the security of the canal, the U.S. was prepared to act to protect it--even if this action involved intervention in Panamanian politics. Likewise, disgruntled factions within Panama were willing to call for U.S. intervention to help them in their domestic struggles. Between 1906 and 1920, the U.S. military intervened four times to restore civil order in Panama--three of these times at the request of the Panamanian government. (Ref. 5:p. 27)

Another pattern in U.S.-Panamanian relations was set in the 1930's. The Panamanians came to view the U.S. rights in the Canal Zone as an infringement upon Panamanian sovereignty. In the 1930's, the U.S. sought to accommodate Panamanian demands while maintaining the U.S. control of the canal. In 1933 the Panamanian President, Harmodio Arias, traveled to Washington, D.C. to seek canal concessions from Franklin Roosevelt. As Roosevelt had decided to seek better U.S.-Latin American relations, he

was receptive to Arias' requests. Before Arias departed, Roosevelt agreed to limit U.S. rights in the Canal Zone to those necessary for the "maintenance, operation, sanitation and protection of the Canal." (Ref. 5:p. 30)

The Arias initiative ultimately led to the Hull-Alfaro Treaty of 1936. The treaty abrogated the provision of the 1903 Hay-Bunau-Varilla Treaty which provided for a U.S. guarantee of Panama's independence and the concomitant U.S. right to intervene. The U.S. also relinquished the right to expropriate additional Panamanian land in connection with the defense of the canal. Panama's annuity was increased, and U.S. private commercial operations within the Canal Zone which were unconnected to the canal's operation were forbidden. This treaty was not ratified until July of 1939, because the U.S. Senate was concerned with what appeared to be a weakening of the canal's security. Accordingly, ratification was delayed until Panama agreed to accept the right of the U.S. both to defend the canal unilaterally and to conduct military exercises within Panama. (Ref. 5:p. 31)

Despite the accommodation achieved in 1939, the U.S. grew increasingly concerned about the security of the canal and the course of Panamanian politics. In 1940 Arnulfo Arias, Harmodio's brother, was elected Panama's president. Arias appealed to Panamanian nationalism, opposed the U.S. presence within Panama and sought to rid the country of all

non-Hispanics. With fascist sympathies, Arias began to obstruct U.S. preparations for the defense of the canal and instead sought to establish Panama's neutrality during the Second World War. With alleged U.S. support, the Panamanian National Police deposed Arias in October of 1941, and thereafter the Panamanian government cooperated closely with the U.S. throughout the war. (Ref. 5:p. 32; Ref. 18: pp. 39-41)

The 1941 coup marked the entry of the Panamanian military, then known as the "National Police," into Panamanian politics. Throughout the Second World War, the military proved very effective in curbing Axis activity within Panama--thus making the U.S. defense of the canal an easier task. In February of 1947, Jose Antonio Remon became the commander of the police. That same year anti-U.S. riots erupted throughout Panama over the issue of the continuance of U.S. wartime bases. Remon effectively subdued the riots and established the military as the guarantor of the political order. Remon then reformed the police into a "National Guard" and became the acknowledged "king-maker" in Panamanian politics between 1948 and 1952. (Ref. 5:p. 33; Ref. 39:p. 275)

Remon sought to be more than a military dictator. He was elected to be Panama's president in 1952 and promptly instituted a popular program of social and economic reform. Remon realized that opposition to the U.S. presence in the

Canal Zone was a fundamental ingredient in Panamanian nationalism. Accordingly, Remon traveled to Washington, D.C. in 1953 to seek further canal concessions from the U.S.--a populist ploy which had worked successfully for Harmodio Arias in the 1930's. Remon's initiative led to a new treaty in 1955 which further reduced U.S. commercial activity within the Canal Zone and agreed to eliminate U.S. wage discrimination against Panamanian canal workers. Remon did not live to see the ratification of the treaty; he was assassinated in January of 1955. (Ref. 5:p. 34; Ref. 18:pp. 49-52; Ref. 39:pp. 275-276)

The U.S. concessions failed to check rising Panamanian nationalism and anti-U.S. feelings. In 1956 agitation arose within Panama for the nationalization of the canal. Anti-U.S. riots erupted in May of 1958, November of 1959 and January of 1964. The 1964 riots were exceptionally brutal, leaving 29 people dead and another 350 to 459 wounded. U.S. President Lyndon Johnson promised to negotiate a new treaty with Panama, and matters in 1964 settled into an uneasy calm. However, as the new treaty negotiations became inconclusive, anti-U.S. sentiment rose even higher within Panama. In 1968 Arnulfo Arias again won the presidential election, campaigning on a platform calling for the immediate return of the Canal Zone to Panama. (Ref. 5: pp. 35-38; Ref. 18:pp. 52-53, 58, 117, 146-150; Ref. 40: pp. 65-66)

Arias held office only 11 days; on October 11, 1968 he was once more deposed by the Panamanian military. This time the military kept the power for itself. The National Guard's opponents were arrested, exiled or threatened with expropriations. The Panamanian National Assembly and all political parties were disbanded. The University of Panama--the hotbed of popular agitation since its founding in the 1930's--was closed for several months while activist faculty and students were systematically expelled. The Panamanian media was brought under control by a combination of censorship, intervention in management and expropriation. The changes within the country were followed by a struggle within the military to determine who would control both. By December of 1969, General Omar Torrijos was the unquestioned Commander of the National Guard and the Leader of the Revolution. (Ref. 5:pp. 4, 42-43)

Like Remon, Torrijos aspired to be more than a military dictator. To gain popular support, Torrijos instituted a program of costly public works, urban renewal and agrarian reform. Understanding the heart of Panamanian nationalism, Torrijos pledged to seek the return of the Canal Zone to Panama. Through such a program, Torrijos succeeded in building a large following among nationalists, urban workers and small farmers.

The treaty negotiations between the U.S. and Panama failed to make significant progress until U.S. President

Carter assumed office in 1977. With Carter's commitment to improve U.S. relations with both Panama and the rest of Latin America, the negotiations began in earnest. The Panamanians sought immediate control of the canal, the immediate withdrawal of all U.S. forces and the payment by the U.S. to Panama of a large cash grant. The U.S. sought to lessen tensions between Panama and itself, while maintaining its access to the canal. The final bargain was made in the 1977 Panama Canal Treaty and in the 1977 Neutrality Treaty. In order to permit an orderly transition, the Panama Canal Treaty provided that the U.S. would not relinquish control of the canal until December 31, 1999. To appease the Panamanian's desire for immediate control, the Panamanians were given four seats on the nine man Panama Canal Commission (the canal's Board of Directors), were promised increasing participation in the operation of the canal and were also given increased income from the canal. By the year 2000, Panama will control the canal and all U.S. forces will be withdrawn. (Ref. 40)

To protect the U.S. concerns with regards to the defense of the canal, the U.S. insisted that the 1977 Neutrality Treaty be a part of the bargain. The Neutrality Treaty guarantees the U.S. unrestricted access to the canal, ensures that no third-party forces will be stationed in Panama and makes the U.S. a guarantor of the canal's neutrality. The Panamanians balked at the treaty, claiming that it would

be a tool for continued U.S. intervention in Panama. However, Torrijos made the decision to accept the two-treaty bargain as the best way for Panama to gain control of the canal without a violent confrontation with the U.S. (Ref. 40; Ref. 41)

The ratification of the two treaties in 1978 brought problems for both Panama and the United States. For Panama, the treaties gave both too little and too much. The treaty gave too little because Panama had to wait until 1999 to gain control of the canal and because the Neutrality Treaty ostensibly gave the U.S. the right to intervene in Panama after the year 1999 if the U.S. believes that the canal's security is threatened. The treaty gave too much because by providing for the elimination of the U.S. presence within Panama, it knocked the heart out of Panamanian nationalism. In 1978 Torrijos commented that the ratification of the treaties had left a "political emptiness" in Panama. (Ref. 40; Ref. 41:pp. 151-152)

From the U.S. perspective, the problem with the treaties is that while the promised withdrawal of U.S. forces and U.S. control lessened the sensitivity of Panama toward the U.S., it increased the sensitivity of the U.S. toward Panama. The economic and military health of the canal depends on a long-term commitment by a stable and competent government. The U.S. has provided such a commitment since 1904 and will continue to do so until 2000. After 2000 this

responsibility will devolve onto the Panamanian government. Accordingly, U.S. interests in the canal after 2000 will depend on the Panamanian government. Realizing this, the Carter Administration encouraged Torrijos to step down from power and to begin to return Panama to democracy.

In October of 1978, Torrijos resigned as the formal head of government, and political parties were legalized. The Torrijos coalition became the ruling Democratic Revolutionary Party, and the party selected Aristides Royo to be the Panamanian President until elections could be held in May of 1984. Torrijos remained the head of the Panamanian Defense Forces and continued to influence the policies of the government. (Ref. 5:p. 135)

On July 31, 1981, Torrijos died in a plane crash. General Florencia Flores assumed command of the military and an uneasy calm took hold until 1982. In March of 1982, Flores was forced into retirement, and General Ruben Dario Paredes assumed control of the Defense Forces. In July of 1982, Paredes forced President Royo to resign and replaced him with Vice-President Ricardo de la Espriella. (Ref. 42; Ref. 43)

In August of 1983, General Paredes voluntarily retired from the Defense Forces in order to run for president in 1984. General Manuel Antonio Noriega assumed command of the military. Shortly after the change, Noriega made it clear that Paredes would not receive the backing of the ruling

party. Instead, in February of 1984, the Democratic Revolutionary Party (DRP) chose Nicolas Ardito-Barletta to be its candidate in the May elections. Ardito-Barletta was a minister of planning under Torrijos and a Vice-President of the World Bank. He lacked a personal power base within the country and relied entirely on the DRP. (Ref. 44; Ref. 45:pp. 196-197)

Ardito-Barletta won the election, narrowly defeating Arnulfo Arias who had returned from exile to run once more for president. However, Ardito-Barletta's election would not conclude the era of Panama's political instability. With the government besieged with economic problems and with loss of political confidence, Noriega forced Ardito-Barletta to resign in September of 1985. Vice-President Eric Arturo Delvalle became the new Panamanian President, while Noriega continued to exercise the real political power. (Ref. 45: pp. 196-198)

This new political arrangement endured until March of 1988. By this time, Noriega was opposed by the majority of Panamanians and was indicted by a U.S. grand jury in Miami on charges of aiding international cocaine trafficking. In March, President Delvalle fired Noriega as Commander of the Panamanian Defense Forces. However, Noriega controlled the Panamanian National Assembly, so the Assembly fired Delvalle as the President of Panama. Delvalle refused to accept the decision, went into hiding and began to work with the opposition parties to oust Noriega. (Ref. 46; Ref. 47)

Once more the U.S. became concerned about the course of Panamanian politics. While the opposition parties within Panama conducted a general strike, the U.S.--at Delvalle's request--froze Panamanian assets within the U.S. and applied economic sanctions against the Noriega dominated government. While the U.S. action has not yet produced a serious anti-U.S. backlash within Panama, Noriega remains in power. Thus, for the United States, while Panamanian nationalism remains dormant from the ratification of the Panama Canal Treaty, U.S. interests in the canal after the year 2000 remain dependent on the future stability of the Panamanian government. Since 1981, Panama has been unable to produce such a government. (Ref. 48)

C. SUMMARY

In order to maintain the Isthmus as a link in their lines of communication, Sea Powers have incurred substantial economic, military and political costs. Economically, Spanish and American investment developed the Isthmus. Militarily, both Spain and the United States had to fortify and garrison the Isthmus. Furthermore, the defense of the Isthmus has also required extensive and complex military operations throughout the hemisphere. Politically, the U.S. has had to pursue the contradictory policy of ensuring the safety and operation of the canal, while avoiding the backlash of Panamanian hostility toward the U.S. presence. While pursuing this contradictory

policy toward Panama, the U.S. has also tried to keep rival powers out of the Caribbean and to minimize anti-U.S. feeling throughout Latin America.

IV. THE FUTURE

The future of the canal--both its value and its costs--depends on many factors. These factors could evolve in ways to alter both the canal's value to the United States and its costs. History indicates that anything which will affect the value of the commerce transiting the canal will affect the value of the canal itself. In terms of future costs, most of these will depend upon the degree of cooperation or of conflict between the United States and Panama. If after 2000 the United States and Panama are able to establish a strong partnership, then the costs for the United States will likely decrease. If conflict is the norm after 2000, then costs will increase.

A. FUTURE VALUE

For the foreseeable future, the commercial and military value of the canal to the United States is likely to remain constant. Commercially, it should continue to be of significant, although minor, value. Militarily, the canal will continue to be an irreplaceable asset during wartime. The most likely way to increase the value of the canal would be to increase its capacity, but at the present this option does not appear to be economically feasible. On the other

hand, its value could be decreased either by the development of economic alternatives or by the deterioration of the canal's service.

1. Increasing the Capacity

Due to the dimensions of the locks, the maximum ship size which can presently transit the canal is 975 feet in length, by 106 feet in width, by 40 feet in draft (Ref. 21:p. 227). In the late 1970's, these limitations meant that of the approximately 22,500 merchant ships then in use throughout the world, 1,300 ships (six percent) were too large to transit the canal, while another 1,700 ships (eight percent) could only transit with a partial load (Ref. 15:p. 83). The alternatives to the present canal are to build a new sea-level canal (i.e., a canal which would not need locks) or to build a third and larger lane of locks next to the existing two lanes. A sea-level canal could accommodate vessels up to 300,000 tons, while a third lane of locks could accommodate vessels over 100,000 tons. By way of comparison, the present canal can not handle ships over approximately 70,000 tons.

Such solutions to the limited capacity of the canal, while probably technically feasible, are not presently economically feasible. For example, the estimated cost of a sea-level canal in 1977 was six billion dollars while the cost of a third set of locks was 2.6 billion dollars. Assuming a seven percent interest rate, the yearly interest

alone on these projects would be \$420 million and \$182 million respectively. In contrast, the gross income (i.e., not deducting operating expenses) of the canal in 1981 was \$383 million. (Ref. 20:p. 68; Ref. 49)

2. Economic Alternatives

Economic alternatives to the canal exist, and if these alternatives were further developed, then trade might be diverted away from the canal and its value thus decreased. These alternatives include railroads, supertankers (i.e., vessels too large for the canal) and the development of alternate markets and sources.

In the late 1970's, it cost \$783 to move a standard size shipping container by rail from the U.S. East Coast to the West Coast or \$715 to move the same container by water via the canal. The critical difference which favored railroads over the canal was the transit time: six days by rail versus 14-15 days by water. In 1977 the U.S. rail system was only at 40% capacity and thus could absorb all non-bulk cargo then being shipped through the canal. (Ref. 50:p. 189)

In contrast, bulk cargo presents serious problems for using railroads instead of the canal. While one U.S. economist, Ely Brandes, believed that U.S. railroads could be used to ship grain and lumber that was being shipped through the canal (Ref. 50:pp. 350-351), other analysts point to significant problems with this solution. Paul

Ryan, the author of The Panama Canal Controversy, has stated that the grain from the U.S. Midwest could be shipped to such ports as Portland and Seattle by a combination of railroads and trucks and then sent to the Far East via merchant vessel. However, it would take about five years to develop the necessary U.S. rail and port facilities (Ref. 15:p. 93). In testimony before Congress in 1977, James W. Boone, Director of the Federal Railroad Administration's Office of Rail Economics and Operations, reiterated this theme. Boone noted that limits in port facilities restricted the railroads' ability to absorb the canal's grain trade. For example, the West Coast has only 40% of the grain storage facilities available at the Gulf and Atlantic ports. Furthermore, increased transportation costs if shipped by rail could mean the loss of the U.S. wheat producers' comparative advantage, in the international grain trade, to foreign wheat producers. Likewise, lack of West Coast coal-handling facilities and substantial increases in transportation costs prevent railroads from absorbing the canal's trade in metallurgical coal. (Ref. 20:pp. 107-109)

Developing these facilities would, however, be a direct benefit to the U.S. economy. This fact led U.S. economist Stephen Gibbs to observe "the possibility cannot be ruled out that the United States might actually be better off in an aggregate, economic sense by closing the canal." (Ref. 20:p. 271) Furthermore, it is interesting

to note that the 1985 canal grain trade decreased in volume as a result of "very low rail rates" to U.S. West Coast ports (Ref. 51).

Like the land alternatives, sea alternatives to the Panama Canal are already in use. Forty percent of the U.S. foreign coal trade presently bypasses the canal. For example, large multipurpose commodity carriers (in excess of 100,000 tons) pick up coal from Norfolk, transit to Brazil for a load of iron ore, complete their load with oil from Nigeria and then sail around the Cape of Good Hope to Japan. Shippers have found it cheaper to transport coal this way than with smaller ships through the canal, even though the canal trip takes only 27 days instead of 38 days. Likewise, super merchant-carriers might be able to absorb the canal's trade in grain, phosphates, iron ore and petroleum. (Ref. 15:p. 83; Ref. 20:pp. 107-109; Ref. 50:pp. 350-351)

Finally, with regard to economic alternatives to the canal, if the Panama Canal were to be closed, then several existing trades might become too expensive to be economically feasible. On the other hand, it is estimated that upon closure, approximately 40% of the trade could promptly shift to new markets and sources and thus bypass the canal. Studies indicate that there are probably alternate markets and sources for the present canal trade in sugar, lumber and paper products, ores and concentrates, fertilizers and petroleum products. (Ref. 20:p. 47; Ref. 50:pp. 350-352)

In contrast to the existence of economic alternatives to the canal, there does not appear to be good military alternatives to Panama as a line of communication. If the canal ceased to exist, the U.S. would incur two military costs: first, it would lose one line of communication for supporting its forces overseas, and second, in order to transfer its naval or merchant ships from one ocean to another, it would have to send these ships around Cape Horn.

As previously mentioned, U.S. economists indicate that in the long-run there are numerous economic and transportation alternatives to the canal. In the long run, these commercial alternatives could also provide alternate military lines of communication. Nonetheless, even when these alternatives were developed, the only way to transfer ships between the oceans, whether naval or commercial, would be to send them around Cape Horn. Sending ships around Cape Horn during wartime poses a serious problem: they would have to be defended. Extending our maritime defenses to cover the 8,000 mile detour around South America could prove to be a difficult task in wartime. Furthermore, the detour would greatly increase the time required to reinforce the U.S. fleets in either ocean.

3. Canal Service

In addition to the development of alternatives to the canal, a deterioration in the efficiency of the canal could impair its value. A key issue is whether the Panamanians

will be able to operate the canal after the year 2000. In October of 1979, pursuant to the Panama Canal Treaty, the U.S. transferred the Panama Railway to Panama. By 1982 the railway service had deteriorated to such an extent that canal employees who used it to go to work were frequently late because of delays in the railroad. Panamanian officials sought a subsidy from the U.S. in order to improve the quality of the service (Ref. 52). It is impossible to predict now whether the operation of the canal after the year 2000 will or will not deteriorate in the same way that the operation of the railroad deteriorated after 1979.

B. FUTURE COSTS

The future costs of the canal to the United States will depend heavily on the degree of cooperation between the U.S. and Panama. Arguably, the 1977 Panama Canal Treaty and the 1977 Neutrality Treaty will greatly reduce the U.S. costs. The transfer of the control of the canal will eliminate the anti-U.S. sentiment within Panama and the transfer of the local defense responsibility to Panama will reduce the U.S. cost of defense. While the Panama Canal Treaty thus reduces the U.S. costs, the Neutrality Treaty will guarantee U.S. access to the canal. On the other hand, it can also be argued that the future costs will likely escalate. The experience with the Panama Railway demonstrates that the U.S. will have to subsidize an inefficient Panamanian operations if the canal

is to continue to operate. Furthermore, a conflict between the U.S. and Panama in the interpretation of the Neutrality Treaty will heighten the political conflict between the two nations after the year 2000.

How to interpret the Neutrality Treaty is a potentially serious issue. With regard to a clear-cut attack by a third party on the canal, there does not seem to be any disagreement as the U.S. right and responsibility to come to Panama's assistance (Ref. 19:pp. 525-526; Ref. 53). Nonetheless, serious problems in the interpretation of the treaty do exist. During the Congressional hearings on the 1977 treaties, the U.S. Department of Defense made it clear that it interpreted the 1977 Neutrality Treaty to mean that after the year 2000 the U.S. will have the right to determine unilaterally whether the canal's security is at risk and then to reintroduce U.S. troops into Panama if it thus deems it necessary (Ref. 11:p. 162; Ref. 21:pp. 244-245). This liberal interpretation of U.S. rights under the Neutrality Treaty appears to conflict with Panamanian expectations concerning the nature of the U.S.-Panamanian relationship after the year 2000. The Panamanians are wary that the right of the U.S. to defend the canal from third party attacks might become a pretext for U.S. intervention in Panamanian domestic affairs.

On the other hand, Panamanians may attempt liberally to interpret the meaning of the canal's neutrality so as to thwart

the U.S. right to use and to defend the canal. In 1984 Panamanian Vice-President Jorge Illueca stated that the security of the canal was based on its neutrality, instead of on military considerations (Ref. 54). That same year, Foreign Minister Oyden Ortega stated that the canal's best defense was its neutrality and the universality of its services (Ref. 55). This position, if pushed to an extreme, could conflict with U.S. expectations for access to the canal. In his 1984 statement, Vice-President Illueca stated "to the extent of our abilities we will never allow the Panama Canal to serve military ends or purposes." (Ref. 54) Arguably, permitting a U.S. warship or U.S. vessel to use the canal while the vessel is on a wartime mission could be construed as a violation of the canal's neutrality. The U.S. tried to foreclose this argument in the 1977 Neutrality Treaty by providing, in Article IV, that U.S. warships and auxiliary vessels have the right to transit the canal expeditiously "irrespective of their internal operation, means of propulsion, origin, destination, armament or cargo carried." Whether this provision will go without challenge, amendment or qualification remains to be seen.

The defense of the canal becomes much more costly, both politically and militarily, if an attack is conducted or supported by a faction within Panama. The Panamanians, given their history, are adamantly opposed to U.S. intervention in Panamanian internal affairs. In his 1984 statement, Vice

President Illueca cited a U.S. legal authority for "the crystal-clear conclusion that if the United States were to take military action to keep the canal open, such military action could not be directed against Panama's territorial integrity." (Ref. 54) But the issue is not always crystal clear. If a terrorist force did attack the canal but claimed to be Panamanian in origin, then U.S. defense of the canal could appear to be intervention to maintain the status quo Panamanian government. On the other hand, the U.S. might not wish to permit a Panamanian civil war to destroy the canal and deprive the U.S. of its access to the canal under the Neutrality Treaty.

Thus, it is possible that the future military and political costs of the canal to the U.S. will increase. Unquestionably, it is easier for the U.S. to defend the canal if it has forces and bases within Panama, but the Panama Canal Treaty mandates the withdrawal of these forces by December 31, 1999. While this withdrawal will bring the U.S. political gains, the potential conflict over the Neutrality Treaty could eliminate these gains. If the U.S. unilaterally inserts military forces into Panama to improve the defense of the canal, the political backlash would be tremendous. Not only would it appear that the U.S. was continuing a colonial policy in Latin America, it would appear that the U.S. was willing to violate a treaty, i.e., the Panama Canal Treaty, in order to pursue this policy.

In such an event, the cost of defending U.S. interests in the canal would be even greater than they were before the ratification of the 1977 treaties.

C. CONCLUSION

The only way to minimize these costs, if possible at all, is to build a relationship with Panama that will provide the U.S. with the necessary use of the canal, provide the canal with the necessary great power support to defend and to maintain it and to provide the Panamanians with the necessary sense of independence and sovereignty. Both nations value the canal, and each nation needs the cooperation of the other in order to maximize this value. For the U.S., it must continue to support Panama while refraining from excessive interference. Since the distinction between support and interference is extremely subjective, the U.S. must work with the Panamanians to reach a mutually acceptable definition. The present U.S. policy of not implementing measures against Noriega without the request of Delvalle is a good example of such cooperation. For Panama, it must seek to establish a government with long term stability. Without such stability, it will be unable to operate the canal and unable to form a partnership with the U.S. With the pending departure of the U.S. troops and canal workers by the year 2000, the Panamanians must seek some other basis for national identity and unity other than opposition to the U.S. presence.

With regard to the formulation of U.S. war plans, this study recommends that strategic planners should assume that the canal will be available to the U.S. during wartime until the year 2000. Historically, the U.S. has been able to keep the canal open during both major wars such as the Second World War and minor wars such as the Korean and Vietnam Wars. In all wars, the canal has been very useful for transferring naval units between the Atlantic and Pacific Oceans and for resupplying our forces overseas. With the exception of the Second World War, this availability of the canal has been maintained without a major reinforcement of the 10,000 troops which the U.S. maintains in Panama. In the Second World War, the garrison was increased to about 45,000 by 1943, but was thereafter rapidly decreased as the threat to the Western Hemisphere dwindled. These forces were never frontline troops, and, even then, were ultimately considered excessive given the limited threat which materialized. Other than an expanded demand for the defense of shipping, the primary threat to the canal was sabotage--a threat which the Department of Defense has estimated can be countered by the forces already in Panama.

Admittedly, if the threat escalates greatly above the level of sabotage, the canal either will be closed or will have to be reinforced. However, such an escalation before the year 2000 does not seem likely. The canal is vulnerable to nuclear attacks, but so are the vast majority of U.S.

defense facilities. If a war goes nuclear at the outset and destroys the canal, then the canal will not matter at that time: the focus of the war will have already switched from conventional forces (which the canal supports) to strategic nuclear forces. The closure of the canal will not be important under such circumstances.

On the other hand, if the threat escalates to the risk of large commando raids or multi-division offensives, then the U.S. forces in Panama will have to be reinforced--perhaps by an additional 100,000 troops. However, this type of threat is also unlikely before the year 2000. In order for such an attack to become possible, large, hostile bases would have to be established in close proximity to the canal. While the argument could be made that Cuba or Nicaragua already provide such bases, this threat does not seem likely. Both countries would have to devote their entire military to support such a large scale offensive, which would mean risking their nation's existence for the dubious objective of closing the canal. On the other hand, if hostile bases were established near the canal and if large scale offensive actions were being mounted against the U.S. in the Caribbean, then the global balance of forces will have dramatically shifted against the United States. The U.S. would have to eliminate its overseas commitments and defend against the threat which would then exist in the Western Hemisphere--whatever the cost. Once these attacks

were thwarted, the canal would prove to be a useful tool for mounting U.S. offensives against the hostile bases. However, it must be emphasized that neither a nuclear attack nor a multi-division offensive against the canal is likely before the year 2000. Thus, U.S. strategic planners should assume that the canal will be available during wartime until the year 2000 with only minor reinforcements.

In sharp contrast, planners should assume that after the year 2000 the canal will not be available in wartime. Absent an agreement extending our base rights in Panama after the year 2000, the U.S. should not assume that the Panamanian military will be able to defend the canal and limit damage in the event of an attack. With the canal not available, U.S. naval and maritime assets will be effectively splintered for the first time since 1914. The U.S. will either have to fight its wars with the naval and maritime assets already assigned to the particular ocean of conflict or the U.S. will have to expand the number of its naval and merchant assets to cover the 8,000 mile detour around Cape Horn. Either way, the capability of existing maritime assets will face greater burdens after the year 2000. Accordingly, if no new base agreement is obtained, the U.S. will either have to increase its maritime assets merely to match the existing capability or it will have to reduce its overseas commitments in order to reflect the decreased wartime capability.

At this point in history, the Panama Canal's value, economic cost and military value are all stable and will likely continue to be so until the year 2000. The greatest variable at the moment for the United States is the canal's political cost. The Panama Canal Treaty aspired to minimize these costs by establishing a symbiotic partnership between the United States and Panama starting in the year 2000. Now that the United States has committed itself to such a partnership, the best policy is to strive to work with the Panamanians to ensure that the partnership succeeds. If the partnership degenerates into hostility after the year 2000, then the Panama Canal Treaty will have failed. However, even then, the potential value of the canal will endure. It will then be the responsibility of a future U.S. leader to seek a new way to minimize the canal's costs in order to realize its strategic value as a component of U.S. Sea Power.

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